

**U. S. DEPARTMENT OF ENERGY
WORK BREAKDOWN STRUCTURE DICTIONARY
PART II - ELEMENT DEFINITION**

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| 1. PROJECT TITLE/PARTICIPANT Environmental Management/Paducah Remediation Services, LLC (PRS) | | 2. DATE 06/29/07 | 3. IDENTIFICATION SITE Paducah Project DOE Portsmouth/Paducah Project Office (PPPO) |
| 4. WBS ELEMENT CODE 04.11.10.13 | | 5. WBS ELEMENT TITLE Outyear Environmental Monitoring, Surveillance, and Reporting | |
| 6. INDEX LINE NO. N/A | 7. REVISION NO. AND AUTHORIZATION Rev. 0 | | 8. DATE 06/29/07 |
| 9. APPROVED CHANGES N/A | | | |
| 10. SYSTEM DESIGN DESCRIPTION N/A | | 11. BUDGET AND REPORTING NUMBER N/A | |
| 12. ELEMENT TASK DESCRIPTION THIS IS A PLANNING LEVEL WBS DICTIONARY <u>WBS STRUCTURE</u> The scope of this element includes the following subelements: <ul style="list-style-type: none"> • WBS 04.11.10.13.01 Outyear Environmental Monitoring Subproject Management • WBS 04.11.10.13.02 Outyear Surveillance and Groundwater Well Maintenance • WBS 04.11.10.13.03 Outyear Environmental Sampling • WBS 04.11.10.13.04 Outyear Environmental Reporting • WBS 04.11.10.13.05 Outyear Licenses and Agreements • WBS 04.11.10.13.06 Outyear Sample Management Office <u>INTRODUCTION</u> Scope for Environmental Monitoring (EM) at the Paducah Site, according to the Site Environmental Monitoring Plan (EMP), includes the following: <ul style="list-style-type: none"> • Monitor and maintain the structural integrity of the 284 active groundwater monitoring wells. Well maintenance includes replacing broken concrete pads; repairing or replacing the outer protective steel casing; repairing or replacing bollards, casing covers, lock hasps and hinges; drilling weep holes in the outer protective casing; painting the outside of the outer protective casing; and well rehabilitation or replacement. • Monitor outfalls, seeps, in-stream surface water locations, and sediment monitoring locations. • Conduct thermoluminescent dosimeter (TLD) monitoring at 46 locations. • Conduct landfill surface water and leachate monitoring. • Perform biological monitoring in accordance with the EMP and the Watershed Monitoring Plan (WMP). • Perform daily inspections of the C-616-L lift stations and maintain sitewide silt fences, as necessary. • Conduct required inspections for the C-404 and C-746-K Landfills and other restoration project activities that require routine inspections and correct deficiencies as required. • Execute an estimated 80 license agreements with local residents and businesses that reside in the Water Policy "box." • Execute an estimated nine license agreements with local residents in accordance with the Water Policy. • Execute an estimated two license agreements with West Kentucky Wildlife Management Area (WKWMA) to access extraction wells. • Execute an estimated six license agreements with local residents to access and sample wells. | | | |

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- Prepare and submit reports identified in Section J, Attachment 4.1, including obtaining sample data and technical input from various groups maintaining relative data.
- Maintain the Sampling Management Office (SMO), which provides data management, laboratory coordination, and hardware and software systems, including Oak Ridge Environmental Information System (OREIS), Paducah Environmental Monitoring System (PEMS), and Geographic Information System (GIS).

LOGIC RELATIONSHIPS

Interfaces:

Internal

- All contractor project managers and staff
- All subcontractors

External

- U.S. Department of Energy (DOE) Portsmouth/Paducah Project Office (PPPO) and support contractors
- DOE Headquarters (HQ) or other DOE Sites (if applicable)
- U. S. Environmental Protection Agency (EPA)
- Commonwealth of Kentucky (KY)
- Site tenants including United States Enrichment Corporation (USEC); Uranium Disposition Services, LLC (UDS); and Swift and Staley Team (SST)
- USEC services in the area of property, information technology, radios, etc.
- SST, particularly in the areas of property management, information technology, and security.
- Nevada Test Site (NTS): Profiling and disposition of newly generated and classified and fissile low-level waste (LLW), if required or applicable.
- EnergySolutions: Profiling, treatment, and disposition of mixed and LLW, if required or applicable.
- Toxic Substances Control Act (TSCA) Incinerator, if required or applicable.
- Commercial Treatment, Storage, and Disposal Facility (TSDF): For treatment and disposal of nonradioactive hazardous waste, if required or applicable.
- Stakeholders
- Citizens Advisory Board (CAB) and supporting contractor Edward Holmes, Inc.
- DOE Integrated Safety Management System (ISMS) Verification Team
- Other nonregulatory key interfaces

Time Sequencing With Other Work:

- This WBS element contains resources for the site SMO. The SMO coordinates with other projects to procure analytical laboratories to support various field investigations and characterization in accordance with other WBS schedules.

SCOPE DESCRIPTION

WBS 04.11.10.13.01 Outyear Environmental Monitoring Subproject Management

Provide overall management activities associated with this subproject. Activities performed under this subelement include the following:

- Perform technical, contractual, and project functions necessary to effectively manage and report scope, schedule, and budget.
- Maintain all activities within the defined safety, environmental, and quality requirements.

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- Perform technical and personnel management functions.
- Maintain technically qualified and properly trained personnel.
- Develop, evaluate, and report project performance metrics.
- Interface with DOE, KY, EPA, other prime contractors, and stakeholders, as needed.
- Attend meetings in Lexington, KY with DOE staff as needed.
- Perform field management safety audits.
- Manage subcontracts and approve vendor payments.
- Participate, as needed, with requests from the CAB.
- Manage office recycling program.

The method used for determining earned value for this WBS element is Level of Effort.

WBS 04.11.10.13.02 Outyear Surveillance and Groundwater Well Maintenance

- Groundwater Well Maintenance
 - Maintain a comprehensive and effective groundwater monitoring network as documented in the Paducah Site EMP (an estimated 284 wells – see below);

| Wells | Wells as per |
|-----------------------------------|---------------------|
| Area | 2006 EMP |
| S&T Landfill Wells | 19 |
| U Landfill Wells | 21 |
| C-404 Wells | 14 |
| K Landfill Wells | 4 |
| Northeast Plume | 11 |
| Northwest Plume | 12 |
| Carbon Filter System | 1 |
| Surveillance monitoring | 89 |
| Water level collection only wells | 113 |
| Total | 284 |

- Conducting routine inspections of monitoring wells (casings, vegetation, locks, posts, and pads) and perform maintenance, as needed;
- Replace broken concrete pads surrounding the wells;
- Repair, replace, extend the outer protective steel casing;
- Repair, replace, and install vehicle guard posts around the wells;
- Replacing internal well components, as needed (pumps, tubing, etc);
- Drilling weep holes in the outer protective casing;
- Paint the outside of the outer protective casings;
- Well rehabilitation (heating or chemical cleaning and brushing down-hole including the well screens) will be 15 wells per year for fiscal year (FY) 2010 through FY 2019;
- Well abandonment [abandon in place in accordance with the Kentucky Department for Environmental Protection (KDEP) requirements], as needed, once it is determined that a well no longer has a purpose;
- Well installation, typically a 4-inch polyvinyl chloride (PVC) well to the Regional Gravel Aquifer, as required to meet environmental permits or characterize an area for contamination; and

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| <ul style="list-style-type: none">• Perform maintenance/calibration of groundwater field equipment, including sample trailers and vehicles.• Surface Water Institutional Controls Maintenance<ul style="list-style-type: none">• Conduct monthly inspections and maintenance of silt fences at institutional control locations in accordance with regulatory-driven Operation and Maintenance (O&M) Plans.• Outfalls Maintenance<ul style="list-style-type: none">• Monthly inspections of Outfalls 001, 015, 017, and 019 to ensure adequate flow of water and address obstructions/maintenance needs. This is in accordance with the Paducah Site Best Management Practices Plan required by the Kentucky Pollutant Discharge Elimination System (KPDES) permit.• C-404 Landfill<ul style="list-style-type: none">• Perform monthly cap inspections and perform maintenance to ensure cap is effective.• Perform monthly leachate sump inspections to ensure less than 36 inches of water is in the leachate collection sump.• Coordinate pumping and disposal of leachate once water reaches 36 inches.• Perform annual leachate sump integrity inspection and report results to Kentucky Division of Waste Management (KDWM).• Perform quarterly walkover inspections in accordance with the Resource Conservation and Recovery Act (RCRA) permit.• Lift Stations Maintenance<ul style="list-style-type: none">• Daily inspections of the C-755 Lift Station and weekly inspections of the C-400-L Lift Station in accordance with the Paducah Site Best Management Practices Plan required by the KPDES permit.• Repair lift stations, as needed, to ensure good working order.• North-South Diversion Ditch (NSDD) Sections 1 and 2 O&M<ul style="list-style-type: none">• Conduct quarterly inspection of the Underground Radiological Material Area (URMA) postings at the junction of the NSDD and Outfall 001 ditch.• Schedule mowing of area adjacent to pipeline twice during summer months.• Activate and deactivate heat tracing on aboveground piping in fall and spring.• Inspect heat tracing weekly during activation period to ensure good working order.• Schedule mowing of surge basin twice during summer months.• Inspect surface cover of surge basin in Section 2 for erosion semiannually.• Semiannually inspect concrete paved ditch section and spillway for cracks and repair as needed.• O&M of the C-613 Sedimentation Basin• Perform surveillance and maintenance (S&M) activities for the following EM facilities identified in the following table. S&M activities include, but are not limited to, routine inspections, corrective maintenance, rodent and pest control, minor facility repairs, combustible removal, radiological surveys, cleanup of spills/leaks, control of loose contamination and airborne particles, and isolation of utilities. | | |

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| Facility Number | Facility Type |
|------------------|--------------------|
| C-370-E | Monitoring Station |
| C-370-W | Monitoring Station |
| C-375-W8 | Ditch |
| C-375-W9 | Ditch |
| C-375-17 | Outfall |
| C-375-19 | Outfall |
| C-746-K | Landfill |
| C-755-C | Building |
| C-755-T08 | Trailer |
| C-755-T09 | Trailer |
| C-755-T10 | Trailer |
| C-755-T11 | Trailer |
| C-755-T12 | Trailer |
| C-760-A | Basin |
| C-900-01 thru 08 | Control Fences |
| C-613 | Basin |
| C-613-A | Trailer |
| C-613-01 | Pump Station |
| C-613-02 | Pump Station |

- Manage newly generated waste such as personal protective equipment (PPE), sample media returns, purge water, expended containers, and monitoring well equipment associated with all EM WBS scope elements and provide for disposal with technical assistance from Materials Disposition.

The methods used for determining earned value for this WBS element are Level of Effort and Percent Complete.

WBS 04.11.10.13.03 Outyear Environmental Sampling

- Groundwater Monitoring
 - Sample and analyze groundwater from approximately 284 wells in accordance with the Paducah Site EMP.
 - Sample 20 residential monitoring wells in support of the DOE Water Policy.
 - Quarterly and annual water level measurements at 113 wells, as specified in the Paducah Site EMP.
- Surface Water/Sediment Monitoring
 - Sample and analyze surface water quarterly at 21 locations and an additional two seep locations.
 - Sample and analyze sediment semiannually at 16 locations.
 - Sample and analyze surface water weekly, monthly, and quarterly at four KPDES permitted outfalls.
 - Sample and analyze landfill surface water quarterly at the C-746-S&T and C-746-U Landfills in accordance with permits issued by KDWM [C-746-U (073-00045), C-746-S (073-00014), and C-746-T (073-00015)] (permit April 24, 2006).

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- Biological Monitoring
 - Conduct annual watershed and biological monitoring of fish and benthic macro invertebrate communities in Bayou Creek, Little Bayou Creek, and at a background location (Massac Creek).
 - Coordinate with WKWMA personnel to collect and analyze samples from five deer samples per year. DOE provides the sampling crew and pays for the laboratory analysis. WKWMA personnel perform the deer hunting activities and dispose of the deer carcasses.
- Leachate Sampling
 - Sample and analyze leachate annually from the C-746-S&T and C-746-U Landfills in accordance with permits issued by KDWM [(C-746-U (073-00045), C-746-S (073-00014), and C-746-T (073-00015)] (permit April 24, 2006).
 - Sample and analyze leachate from the C-404 Landfill to characterize leachate pumped from the sump for disposal (approximately three times per year). Sampling is required in accordance with the Paducah Site RCRA Permit.
- External Gamma Radiological Monitoring
 - Continuously monitor 46 locations for gamma radiation using TLDs in accordance with the Paducah Site EMP. Dosimeters are exchanged quarterly.
- Agreement in Principle (AIP) Support
 - Coordinate site access and radiological screening for AIP (KDWP) sampling activities.
 - Coordinate training for the AIP personnel and other administrative requirements to maintain security clearances or security plans.
 - Coordinate split sampling routinely for residential groundwater samples, the C-613 Sedimentation Basin, and others, as requested.

The method used for determining earned value for this WBS element is Level of Effort.

WBS 04.11.10.13.04 Outyear Environmental Reporting

- Prepare groundwater reports, surface water reports, safety-related reports, waste-related reports, and air reports in accordance with regulations and site environmental permits.
- Ensure reports specified in the deliverables section of this WBS element, including selected reports from Section J, Attachment 4.1, of the Contract are technically adequate and are submitted on time.
- Implement the Cultural Resource Management Plan by performing the specific responsibilities regarding the cultural resources at the Paducah Gaseous Diffusion Plant (PGDP), such as Section 106 of the National Historical Preservation Act (NHPA) of 1966 (Amendments of 1980) that makes historic preservation a part of all federal agencies' planning, decision-making, and project execution.
- Assist DOE with meeting the requirements to "take into account" the effect of their projects on historical and archaeological resources. Thus, agencies must consider the effect of the undertaking on any district, site, building, structure, or object that is included in, or eligible for inclusion in, the National Register. DOE will consult with PGDP cultural resources surveys referenced herein to determine if an activity has the potential to affect properties eligible or included in the National Register of Historical Places (NRHP).

The methods used for determining earned value for this WBS element are Level of Effort and Percent Complete.

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| WBS 04.11.10.13.05 Outyear Licenses and Agreements <ul style="list-style-type: none">• Water Policy Agreements<ul style="list-style-type: none">• Assist DOE in negotiating an estimated 80 license agreements with local residents and businesses that reside in the Water Policy “box.”• Monitoring Well Agreements<ul style="list-style-type: none">• Assist DOE in negotiating an estimated nine license agreements with local residents to access and sample wells.• Assist DOE in negotiating an estimated two license agreements with WKWMA to access extraction wells.• Residential Well Agreements<ul style="list-style-type: none">• Assist DOE in negotiating an estimated six license agreements with local residents to access and sample wells. <p>The method used for determining earned value for this WBS element is Level of Effort.</p> | | |
| WBS 04.11.10.13.06 – Outyear Sampling Management Office <ul style="list-style-type: none">• Data Management<ul style="list-style-type: none">• Assist EM and other projects that collect samples by populating sample collection information into PEMS and print chain-of-custody and bottle labeling information from PEMS.• Input sample metadata such as date collected, sample, locations, etc., into PEMS for EM projects.• Input field measurement information into PEMS such as flow, temperature, pH, conductivity, etc., for EM projects.• Assist EM and other projects in loading analytical data from laboratories into PEMS and printing a data assessment package so that results can be evaluated for technical and quality adequacy.• Prepare a RTL format file from PEMS and load data into Paducah OREIS once data reviews are complete.• Provide services to query and download data from OREIS to all projects.• Load USEC data into Paducah OREIS.• Provide monthly data downloads to KDEP and EPA as required by the Federal Facility Agreement (FFA) Data and Documents Management Plan.• Laboratory Coordination<ul style="list-style-type: none">• Coordinate with procurement and projects to place blanket agreement contracts with laboratories and work authorizations with USEC to supply projects with adequate laboratory support.• Assist all projects with preparation of individual laboratory statements of work for each project/program that will require sample collection and analysis.• Coordinate with the DOE Consolidated Audit Program (DOECAP) personnel to ensure that laboratories to be used by Paducah projects are included in the annual auditing program and that a sufficient number of laboratories are available for Paducah projects.• Track samples for projects to ensure that samples are received by the laboratories and data is returned in accordance with the schedules set forth in the statements of work.• Perform a contractual screening of data upon receipt for all projects to ensure that the laboratories meet method and detection limits as set forth in the statements of work. | | |

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- Hardware/Software
 - Provide database administrative support for PEMS, Paducah OREIS, and the site GIS system. This includes granting user access, updating programming codes as networks and systems change, and making minor data structure modifications to accommodate user requests.
 - Installation and training of the Environmental Visualization System (EVS) software for 3-dimensional (3D) data visualization and will support EM and other projects.
 - Purchase and installation of specialty software used in the production of EM documents such as Visio, ArcGIS, Adobe Acrobat, and Adobe InDesign.

The method used for determining earned value for this WBS element is Level of Effort.

DELIVERABLES

WBS 04.11.10.13.01 Outyear Environmental Monitoring Subproject Management

Element Milestones

- None

Element Deliverables

- Paducah Contractor Quality Assurance (QA) Project Plan
- Paducah Contractor Environmental Safety & Health (ES&H) Plan
- Provide input to the following reports and submittals (if applicable):
 - Monthly Project Performance Report
 - Risk Management Plan Updates
 - Site Management Plan (SMP)
 - Solid Waste Management Unit (SWMU) Assessment Report
 - Semiannual Critical Analysis Report
 - Presentations
 - FFA briefings
 - Labor determinations
 - Gold Chart Performance Metrics
 - Annual updates to Site Treatment Plan
 - Annual Compliance Agreement Report
 - Annual ISMS Update
 - Financial Reporting, Management Analysis Reporting System
 - Annual Statement of Costs Incurred and Claimed
 - Monthly Commitment Reports
 - FFA Semiannual Progress Report
 - Remedial Action/Regulatory Commitment Tracking Report
 - Other reports/documents, as necessary

WBS 04.11.10.13.02 Outyear Surveillance and Groundwater Well Maintenance

Element Milestones

- Complete routine inspections in accordance with O&M Plans and the Paducah Site Best Management Practices Plan, as required by the KPDES.

Element Deliverables

- Develop and obtain approval for the following planning documents:
 - Well replacement plan to be submitted to Kentucky Environmental and Public Protection

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| <p>Cabinet (KEPPC) as required for wells to be abandoned (if required).</p> <ul style="list-style-type: none">• Report to KEPPC of surveyed elevation and well details for new wells (if required).• Complete inspections reports for inclusion in appropriate routine regulatory report such as the C-404 Landfill Quarterly Operating Report.• Report O&M inspection results in the FFA Semiannual Progress Report. | | |
| <p>WBS 04.11.10.13.03 Outyear Environmental Sampling</p> <p><u>Element Milestones</u></p> <ul style="list-style-type: none">• None <p><u>Element Deliverables</u></p> <ul style="list-style-type: none">• Samples submittal for analytical analysis to support reporting WBS. | | |
| <p>WBS 04.11.10.13.04 Outyear Environmental Reporting</p> <p>Groundwater Program</p> <p><u>Element Milestones</u></p> <ul style="list-style-type: none">• Completion of each FY EMP. <p><u>Element Deliverables</u></p> <ul style="list-style-type: none">• Groundwater Protection Management Program Plan updated annually• Groundwater Protection Plan updated every three years• Annual Groundwater Monitoring Report• EMP• Annual Site Environmental Report (ASER) <p>Surface Water</p> <p><u>Element Milestones</u></p> <ul style="list-style-type: none">• Completion of each FY EMP. <p><u>Element Deliverables</u></p> <ul style="list-style-type: none">• Monthly KPDES Discharge Monitoring Report• Quarterly KPDES Discharge Monitoring Report• Annual KPDES Watershed Monitoring Report• KPDES Permit Renewal Application• Annual Discharge Monitoring EPA QA Study• KPDES Priority Pollutant Report• Toxicity Reduction Evaluation, as needed <p>Natural and Cultural Resources</p> <p><u>Element Milestones</u></p> <ul style="list-style-type: none">• Approval of regulatory reports. <p><u>Element Deliverables</u></p> <ul style="list-style-type: none">• National Environmental Policy Act (NEPA) Policy Act Planning Summary (Annual)• Federal Archeology Program Questionnaire (Biannual)• Annual Report of Application of Generic Categorical Exclusions | | |

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| <p>Safety Related</p> <p><u>Element Milestones</u></p> <ul style="list-style-type: none">• Approval of regulatory reports. <p><u>Element Deliverables</u></p> <ul style="list-style-type: none">• Hazardous Chemical Inventory Report [Superfund Amendments and Reauthorization Act, Title III, Section 312 (SARA 312)]• Annual Toxic Chemical Release Inventory (SARA 313)• Annual Report on External Gamma Radiation Monitoring <p>Waste Related</p> <p><u>Element Milestones</u></p> <ul style="list-style-type: none">• Approval of regulatory reports. <p><u>Element Deliverables</u></p> <ul style="list-style-type: none">• C-746-S/T Landfill Quarterly Operating Report• C-746-S/T Landfill Quarterly Groundwater Report• C-746-S/T Landfill Quarterly Groundwater Exceedance Report• C-746-U Landfill Quarterly Operating Report• C-746-U Landfill Groundwater Report• C-746-U Landfill Groundwater Exceedance Report• C-404 Hazardous Waste Landfill Quarterly Operations Report• C-404 Landfill Semiannual Groundwater Monitoring Report• C-404 Landfill Groundwater Exceedance Report• C-746-K Landfill Semiannual Surface and Groundwater Report• Annual Document of Polychlorinated Biphenyls (PCBs) at the PGDP• Spill Prevention Control, Countermeasures, and Contingency Plans for Oil, Chemicals, and Hazardous Waste/Best Management Practices Plan• Annual Hazardous Waste Report• Annual Hazardous Waste Assessment Return• Claim for Exclusion from Hazardous Waste Assessment• Notification of Hazardous Waste Activity• Inventory of Federal Hazardous Waste Activities at Currently Owned or Operated Federal Facilities• Waste Generation and Waste Minimization Progress Report• Site Treatment Plan/Federal Facilities Compliance Act (FFCA) Waste Minimization Progress Report (Annual)• Pollution Prevention Program Plan• Monthly Project Waste Management/Pollution Prevention Report• Quarterly Project Waste Management/Pollution Prevention Report• Annual Notification for PCB Transformers <p>Air Reporting</p> <p><u>Element Milestones</u></p> <ul style="list-style-type: none">• Approval of regulatory reports. <p><u>Element Deliverables</u></p> <ul style="list-style-type: none">• Air Permit Applications• Annual Summary of Radionuclide Air Emissions | | |

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| <ul style="list-style-type: none">• Annual Emissions Fee—Title V Fee Emissions Report and Emission Inventory Summary• Annual National Emissions Standards for Hazardous Air Pollutants Report• Emission Inventory Survey• Annual Air Emission Fee | | |
| WBS 04.11.10.13.05 Outyear Licenses and Agreements | | |
| <u>Element Milestones</u> <ul style="list-style-type: none">• Obtain approval signatures for new or renewed licenses agreements. | | |
| <u>Element Deliverables</u> <ul style="list-style-type: none">• Maintain license agreements in accordance with established conditions.• Initiate new license agreements as requested by DOE. | | |
| WBS 04.11.10.13.06 Outyear Sampling Management Office | | |
| <u>Element Milestones</u> <ul style="list-style-type: none">• None | | |
| <u>Element Deliverables</u> <ul style="list-style-type: none">• Submit data to Paducah ORIES for warehousing of site environmental data. | | |
| <u>REQUIREMENTS</u> | | |
| <ul style="list-style-type: none">• CERCLA/National Contingency Plan• RCRA• Clean Air Act• Clean Water Act, Section 308• Superfund Amendments and Reauthorization Act (SARA)• NHPA• KY Hazardous Waste Permit (KY8-890-008-982)• FFA for the PGDP• Residential Landfill Permit KDEP 073-00014 (C-746-S)• Inert Landfill (Closure) KDEP 073-00015 (C-746-T)• Solid Waste Landfill KDEP 073-00045 (C-746-U)• SMP, PGDP, Paducah (annual revisions)• Applicable state and federal laws and regulations [applicable or relevant and appropriate requirements (ARARS)]• Contractor ISMS• UEO-1066, as updated, Lease Agreement between DOE and USEC, Revision 4, dated October 30, 2001• Enclosure to GDP 95-0018, as updated, USEC and DOE Resolution of Shared Site Issues, Revision 1, dated March 30, 1998• Applicable contractor plans, policies, and procedures• Waste acceptance criteria for all applicable treatment and disposal facilities that were in effect on April 24, 2006• Applicable DOE Orders• Applicable Federal Acquisition Regulations (FAR) | | |

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It is the core value of the contractor that the safety and health of every worker, the public at large, and our environment are the most important assets that we are entrusted to protect. To accomplish this, an ISMS, based on DOE's ISMS, has been implemented that incorporates the five core functions and is based on the seven guiding principles. The objective of ISMS is to systematically integrate safety and environmental protection into the planning and execution of all work activities. The term safety encompasses Nuclear Safety, Industrial Safety, Industrial Hygiene, Occupational Health, Health Physics, and environmental issues. ISMS requirements flow down to contractor's subcontractors. The five core functions are (1) define the scope of work, (2) analyze hazards, (3) develop and implement hazard controls, (4) perform work within controls, and (5) provide feedback and continuous improvement. The seven guiding principles are (1) line management responsibility for safety, (2) clear roles and responsibilities, (3) competence commensurate with responsibility, (4) balanced priorities, (5) identification of safety standards and requirements, (6) hazard control tailored to work being performed, and (7) operations authorization.

Before a subproject begins, several activities must be completed that demonstrate that all involved in the project have completed rigorous health and safety reviews and that all potential hazards of doing the work have been identified. The routine activities in remedial actions are conducted in accordance with standard operating procedures, activity hazard analyses, and Integrated Safety Management plans. Nonroutine work will require a readiness assessment, as necessary, to ensure complete health, safety, and environmental reviews prior to work start. This assessment is conducted by people experienced in similar kinds of work with the right to examine all aspects of a project about to commence and requires that the project team provide documented evidence that any applicable requirements of the job have been met.

SCOPE ASSUMPTIONS

- Forty wells (~ 15%) require minor to major maintenance each year, based on Miller Drilling experience at Paducah.
- If required, wells will be abandoned by over-drilling, based on permit requirements.
- Thirty wells will be rehabilitated per year, based on Miller Drilling experience at Paducah. Well rehabilitation will be conducted in accordance with the *Monitoring Well Maintenance Implementation Plan for the Paducah Gaseous Diffusion Plant*, February 2002.
- Two replacement wells will be installed per year; new wells will be 6-inch PVC.
- All discard waters will be discharged to the on-site facility.
- Assume well depths average 60 ft.
- Assume construction materials of varying materials [stainless steel (SS), PVC, grout, etc.].
- PPE is Level D.
- Assume wire-wrapped PVC or SS screens; PVC riser, sand pack, bentonite seal, and high-yield bentonite to surface.
- Wellhead completion is above grade 3-ft x 3-ft x 6-inch pads and four protective bollards.
- Well development is by pumping and surging with discard waters sent to the on-site treatment facility.
- Dedicated submersible pumps are installed in each new well.
- Personnel dosimetry is provided by the Service Center WBS.
- No permit modifications are anticipated.
- Waste will be disposed of within one year of generation. All waste generated after 6/30/2009 will be disposed of prior to 9/30/2019. Waste generated after 6/30/2009 will be the responsibility of the succeeding contractor.
- Monitoring wells/peizometers installed for support of remediation projects are the responsibility of

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that WBS elements. The EM WBS element will include only the costs of continued sampling if there is a need to include the well in Environmental Monitoring Program. If the wells are not needed for future monitoring, the WBS for the initial project must include the cost for abandonment of the well.

- New agreements with regulators will not increase the number of wells that must be installed beyond maintenance.
- Regulatory requirements for well installation within other WBS elements are not priced here.
- No increases in sampling locations or parameters will occur.
- All property owners will accept the renewal of license agreements with DOE.
- Database servers will be purchased and maintained under the Project Management WBS.
- The contractor must provide L-cleared escorts for all workers entering the Limited Area who do not have the appropriate security clearance.
- Past historical well maintenance repair and replacement activities are predictive of future requirements.
- Data from external sources will be received in a timely manner.
- SWMU assessment reports will be developed and included within the appropriate WBS for the project responsible for the SWMU and are not included in this task.
- No additional licenses or agreements requiring renewal will be added to the current list.
- Software maintenance and modifications will be required to keep the OREIS and PEMS systems functional to the needs of the site.

COMPLETION CRITERIA

WBS 04.11.10.13.01 Outyear Environmental Monitoring Subproject Management

- Status project schedule and ensure all costs incurred have been included in the cost accounting system.
- Identify monitoring and prepare plan that defines extended site monitoring associated with long-term legacy management.

WBS 04.11.10.13.02 Outyear Surveillance and Groundwater Well Maintenance

- All monitoring wells are operational and necessary for long-term legacy management or abandoned (if no longer required).
- EM facilities are in good working order.
- C-613 Basin is shutdown.

WBS 04.11.10.13.03 Outyear Environmental Sampling

- Complete FY 2010 through FY 2019 sampling schedules and deliver all samples to the laboratories in a timely manner so that all laboratories' reporting can be completed by 9/30/2019.

WBS 04.11.10.13.04 Outyear Environmental Reporting

- Identify any work in progress to meet deliverables that extend beyond the contract period of performance date of 9/30/2019 and transfer records to appropriate personnel.

WBS 04.11.10.13.05 Outyear Licenses and Agreements

- Complete implementation of licenses and agreements.
- Dissolve license agreements that are no longer needed.

WBS 04.11.10.13.06 Outyear Sample Management Office

- Complete all work activities for the data management element including data entry, database

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| management, graphics, and report outputs. <ul style="list-style-type: none">• Archive databases and records for long-term storage. | | |
| <u>RISK MANAGEMENT</u> | | |
| See Risk Management Plan for analysis. Risk was mitigated through the following efforts: <ul style="list-style-type: none">• A tracking system is being utilized to track deliverables and upcoming license agreements through the multiple internal and DOE review processes in order to provide notification of any deliverables are in jeopardy. This tracking system is updated weekly and reviewed with DOE.• A sampling schedule is developed in conjunction with population of the sampling database. Both are used by the EM Manager to make sure that samples are scheduled and collected in sufficient time to allow analysis and review of the data prior to scheduled deliverable.• Monetary penalties for laboratories are included in the subcontracts for missed deliverable due dates and other quality deficiencies that are not accepted to the contractor.• A surveillance, maintenance, and rehabilitation program for monitoring wells is implemented to extend the life of the well and the internal parts to avoid additional replacement costs. | | |
| <u>CERCLA AREAS AND SWMU</u> | | |
| SWMU 9 (C-746-S Landfill) SWMU 10 (C-746-T Landfill) SWMU 208 (C-746-U Landfill) SWMU 69 (KPDES Outfall 001) SWMU 68 (KPDES Outfall 015) SWMU 59 (NSDD Sections 1 and 2) SWMU 538 (Satellite Accumulation Areas in Sample Trailer) SWMU 539 (Satellite Accumulation Areas in Sample Trailer) SWMU 540 (Satellite Accumulation Areas in Sample Trailer) | | |
| <u>BASIS OF ESTIMATE</u> | | |
| 1. Summary of Site Conditions <ul style="list-style-type: none">• The project management task is a continuation of the currently existing task and, as such, will maintain existing programs and procedures, deliverable dates, and meeting schedules unless otherwise requested by DOE.• Agreements with regulators have been made on the numbers and locations of monitoring wells at this site. It is DOE's goal to continuously optimize this number through continuing negotiations.• Requirements for environmental sampling are contained in the 2006 EMP. Permits and agreements with the Commonwealth of Kentucky require the maintenance and monitoring of landfills and outfalls.• Periodic reporting is required by state and federal regulators, DOE, National Nuclear Security Administration, and various other agencies and stakeholders. Environmental reporting is a continuous task that centralizes the issuance of these reports.• Several existing databases currently house all site environmental data.• In the past, support for data management activities was distributed among projects. | | |

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2. Estimating Methods
☐ Parametric ☒ Bottom-Up ☐ Other: _____

3. Sources of Estimating

- Estimates were developed based on the contractor's experience on other similar projects.
- This estimate is based on the information provided in the statement of work, reference documents, and interviews conducted with individuals familiar with site conditions.
- Travel costs are based on the federal travel regulation.
- Vendor quotes were used for materials.
- 2006 EMP.
- Well Maintenance Implementation Plan.
- Contractor's experience at similar sites, including Fernald, Erwin, Nevada Test Site (NTS), and Oak Ridge groundwater management projects.
- Vendor quotes.

4. Basis of Estimate (Unescalated Values)
See Detail Estimate.

WASTE VOLUMES

See attached waste performance metrics, as applicable.

PROJECT SCHEDULE

See attached schedule.

BASELINE BY YEAR

See attached Baseline by Year Report.

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